Nalco Docket No. 7701
Customer Number: 49459

REMARKS

The Office Action maintains its rejections of Claims 1 to 10 and 12 to 21 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,762,832 B2 to Fisher et al. ("Fisher") in view of U.S. Patent No. 5,278,074 to Rao et al. ("Rao") and U.S. Patent No. 5,922,606 to Jenkins et al. ("Jenkins"). In particular, the Examiner states:

> It would have been obvious to one of ordinary skill in the art to substitute the fluorescent measurement/monitoring system of Rao for the spectroscopic monitoring system of Fisher since Rao discloses that the fluorescent system does not degrade the preferred corrosion inhibitors and in fact, utilizes their inherent characteristics for more accurate concentration readings.
>
> It would further have been obvious to provide means to compensate for measured temperature and pH in the system to optimize the accuracy of the fluorescence measurement, in view of the known and expected dependence of fluorescence on both temperature and pH, as disclosed by Jenkins.
>
> Moreover, one would have found it obvious to apply the method of the combination using continuous water flow through the flow cell, as taught by Jenkins, in order to achieve real-time results. It is noted that Fisher expressly desires real-time measurements.
>
> With respect to Claims 4 to 6 specifically, both references teach application and monitoring of the inhibitor having concentration within the instantly claimed ranges. (col. 11, lines 54 to 56 of Rao; and col. 7, lines 50 to 55 of Fisher).
>
> (Office Action at pages 3 to 4)

Even though Applicants disagree with this rejection, Applicants have amended Claims 1, 18, and 20 to further prosecution of this Application. Applicants respectfully assert that the claimed subject matter viewed as a whole is nonobvious in view of the cited references. Fisher in view of Rao and Jenkins does not in any way disclose, teach, or suggest a treatment bath for copper plated or metallized semiconductor devices or a method of inhibiting corrosion of copper plated or metallized surfaces and circuitry in semiconductor devices immersed in an ultrapure aqueous fluid in a treatment bath as in Amended Claims 1, 18, and 20 (and the remaining claims by respective dependency).

Fisher describes a semiconductor process that includes monitoring and controlling the concentration of a corrosion inhibitor, for example triazole, through absorption spectroscopy

measurements on a sample of the processing solution. Fisher unequivocally states, "The present invention operates on the basis of light absorption:" (col. 3, lines 29 to 30). Thus, Fisher fails to provide teaching, suggestion, or motivation to apply fluorescent techniques to semiconductor process systems. Application of fluorescent techniques in such systems are extremely challenging, particularly because of the lack of pH buffering substances in the ultrapure microelectronics environment, and require significant analytical adjustments to maintain measurement accuracy. These challenges present unexpected obstacles and results. (See Declaration of Brian V. Jenkins and John E. Hoots under 37 C.F.R. § 1.132, dated September 15. 2006)

Rao discloses a fluorometric method for monitoring and controlling the concentration of aromatic azole corrosion inhibitors in industrial water systems, such as cooling towers, including fluorescing a sample of water from the system and determining the concentration from its fluorescence intensity. Rao is unequivocally directed to industries, such as cooling towers, boilers, and other industrial water systems. The disclosure does not teach or suggest the use of the invention for semiconductor devices whatsoever. Ultrapure aqueous systems contain unique chemistries and challenges and simply applying a principle from the industrial water system art to the ultrapure microelectronics art is impossible. A skilled ultrapure aqueous system artisan, as found in microelectronics, knowing the teachings of Fisher and Rao would in no way be motivated to apply principles of industrial water system corrosion inhibitor regulation to ultrapure microelectronics water system corrosion inhibitor regulation.

Jenkins discloses a method of determining wafer cleanliness by fluorometric monitoring the impurities in the semiconductor chip wafer rinse solution. The method includes measuring the fluorescence of the impurities in the rinse solution until a maximum sustained value is reached. The technique described in Jenkins is not a monitoring and control technique of a corrosion inhibitor. Jenkins in no way cures the deficiencies of Fisher and Rao in making obvious the presently claimed invention.

In addition to the drastically unrelated and different operating conditions present in industrial water systems as compared to the ultrapure aqueous systems as presently claimed, the cited references in no way teach or suggest fluorometrically monitoring in a flowcell with a fluorometer having a xenon flashlamp light source the concentration of aromatic triazole

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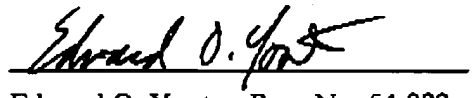
corrosion inhibitors in an ultrapure aqueous fluid. In light of the cited references, a person of ordinary skill in the art facing the wide range of needs within the field of endeavor would not have been motivated to incorporate a xenon flashlamp into the method of Amended Claim 1 or the treatment bath of Amended Claims 18 or 20.

Therefore, Applicants respectfully assert that Amended Claim 1 (and Claims 2 to 10 and 12 to 17 and New Claim 22 by dependency) is patentably distinct and nonobvious over the above-described references. Likewise, Amended Claim 18 (and Claim 19 by dependency) and Amended Claim 20 (and Claim 21 by dependency) are also patentably distinct and nonobvious over the described references for at least the reasons discussed above. Applicants respectfully request that the Examiner accordingly withdraw these rejections.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 103(a) and respectfully assert that pending Claims 1 to 10 and 12 to 22 of this Application are in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully Submitted,



Edward O. Yonter, Reg. No. 54,882
Nalco Company
Patent and Licensing Department
1601 West Diehl Road
Naperville, IL 60563-1198
Phone: (630) 305-1783

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